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The Laboratory Communiqué is a quarterly publication released by Billings Clinic Laboratory Services as an informational tool for medical staff and laboratorians.

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New Test

IPF (Immature Platelet Fraction)

Test: 3215

CPT: 85055

LOINC IPF: 71693-6

LOINC IPF, Absolute:
71692-8

New Hematology Instrumentation

SYSMEX XN 3100 System



On June 4th, the laboratory went live with our new Sysmex XN 3100 System. This system represents an advance in technology over the previous Sysmex 5000 and 1800 analyzers. The new system has two XN Hematology analyzers that are mirror images of each other and now provide full redundancy in testing. They also provide automatic retesting based on decision rules in our new WAM software. A new test has also been added which is the Immature Platelet Fraction (IPF) discussed further below.

This go live was transparent to laboratory users. Through our initial validation and correlation studies, we found no significant variance from our current hematology reference intervals. Reference range adjustments may be made as we gather normal patient population

Chemistry

Revised Test Ionized Calcium, serum

Test: 3988

CPT: 82330

LOINC Ca⁺⁺: 12180-9

LOINC Ca⁺⁺ pH 7.4:
9072-8

test results. These changes will be announced via email.

Two additional modules and a new middleware are also on the XN instrument/automation line and together they have optimized our blood smear morphologic analysis and reporting. They are:

Sysmex SP-50, an integrated Slide Processing System

- Fully automatic standardized slide maker with stainer
- Top smear quality through automatic adjustment to the hematocrit for 8 different concentration areas
- Continuous handling through individual cassette staining
- High throughput with up to 120 stained slides per hour
- Selective random access, slide making either result-oriented and/or patient-oriented
- No direct contact with blood sample
- Bar code sample identification
- Bar code slide identification

CellaVision, a Digital Imaging System

- Automatically locates and presents images of cells on blood smears
- Differential count of white blood cells
- Reduces subjectivity of cell identification with automatic cell location and pre-classification
- Standardize quality of results
- Characterization of red blood cell morphology and platelet estimation
- Reduces the time to review each smear
- Enables training and morphological standardization
- Performing differentials does not fatigue eyes, neck or wrists like microscopy can
- Regions of interest can be tagged, and comments added
- Cell images stored for easy retrieval

WAM, Sysmex Middleware

- Utilizes single user screen for result review, manual differential and morphological observations
- Receives patient demographics and orders from Cerner
- Returns reflex orders, results and comments
- Uses Multi-Disciplinary Rules determined by our lab
- Provides worklist flexibility
- Highlights delta failures and critical results
- Captures and electronically stores scattergrams and histograms with the results
- Eliminates search and retrieval when reference historical results are needed
- Enable auto-validation, reflex and repeat decisions
- Speed throughput, reduce steps and decrease smear result

- rates
- Aligns with our LEAN processes

As previously mentioned, the new Sysmex XN 3100 System allowed for the following new test which is now orderable in Cerner:

Immature Platelet Fraction (IPF)

In the evaluation of thrombocytopenia, quantification of immature platelets may be used as an index of bone marrow thrombopoietic activity, analogous to the red cell reticulocyte count in the evaluation of anemia. This test may be useful in the differential diagnosis of thrombocytopenia. In general, an increased IPF (% and #) may be supportive of peripheral sequestration/utilization such as that seen in ITP or TTP and other conditions in which platelet production is increased. A normal IPF in the face of thrombocytopenia may indicate a production problem such as that seen in marrow failure syndromes and myelodysplasia. This test is not intended to be diagnostic of any condition but merely serves to provide additional information that may be useful.

Chemistry-Revised Test

Ionized Calcium, Serum

Clinical:

Calcium in serum exists ionized, bound to organic anions such as phosphate and citrate, and bound to proteins (mainly albumin). Of these, ionized calcium is the physiologically important or true “bioavailable” form in the circulation. Measurement of serum ionized calcium provides insight into the effect of total protein and albumin on serum calcium levels. A patient can have high total calcium, with normal ionized calcium and increased total protein and/or albumin, as in dehydration or in myeloma. There is an inverse relationship between ionized calcium and phosphate concentration.

Method:

Ion Selective Electrode/pH (ISE)

Specimen: Serum

Blood should be collected in an SST tube. Allow to clot for approximately 30 minutes and centrifuge for 10-15 minutes. DO NOT REMOVE CAP. If the SST centrifuged sample cannot be analyzed immediately, the stability/storage requirements are:

22°C (room temperature) if testing is delayed no longer than 8 hrs.
2-8°C (refrigerated) if testing is delayed 8-48 hrs.



Billings Clinic

Laboratory Services
Contact Us

(406) 657-4060
(866) 232-2522

Director/Pathologist:
Jeffrey Smith, MD

Lab Director:
Mark Lubbers, MT ASCP

Lab Manager:
Rebecca Schulz
Extension 4861

Technical Consultant:
Joni Gilstrap, MT ASCP
Extension 4046

Supervisor
Meet Patel MT ASCP
Extension 4644

Supervisor
Heather Verbeck
Extension 6409

**Laboratory Marketing
Coordinator**
Jena DeVries
Extension 4888

If assay will not be completed within 48 hours or if the serum sample is to be stored beyond 48 hours, the sample should be stored frozen at -20°C. Uncap the tube and separate the serum from the specimen using a pipette and dispense the serum into a clean plastic transport tube. Cap immediately to preserve anaerobic conditions as much as possible

Days Set Up: Daily

Reference Ranges:

0 hours – 31 days:	1.00 – 1.50 mmol/L
31 days to 6 months:	0.95 – 1.50 mmol/L
6 months to 18 years:	1.22 – 1.37 mmol/L
18 years to 150 years:	1.10 – 1.30 mmol/L

Critical Range:

0 hours – 150 years:	<0.80 mmol/L or >1.60 mmol/L
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Interpretative Comment:

The activity and concentration of ionized calcium in serum is pH dependent. On standing, the pH of serum rises due to the loss of CO₂. Anaerobic samples may not be anaerobic due to transport. In those cases, by measuring the actual pH of the sample at the same time as the ionized calcium is measured, a normalized ionized calcium can be calculated. The normalized ionized calcium represents what the ionized calcium concentration would have been if the initial pH was 7.4 (the midpoint of the pH reference range).

For more information about Billings Clinic Laboratory please call (406) 657-4060.
www.billingsclinic.com

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Billings Clinic

2800 Tenth Avenue North
P.O. Box 37000
Billings, Montana 59107-7000

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